

Demonstration of Autonomous Rendezvous Technology (DART)

Case Study Transcript

Jim Snoddy & Mark Krome

**Changes in Risk
Posture 2**

Jim Snoddy

If you don't set up the right rigorous system engineering and engineer it up front, is very difficult on the end because in the end you end up with all the test failed fix. DART ended up with 300 plus related to critical design review, ended up with six components that were failed and ended up in a band aid approach of trying to do system engineering so you spent all your time on DART trying to fix all the system engineering inadequacies and you really didn't have time to think about the broader context and actually trying to figure out how to make it better.

Mark Krome

Within the culture of the Marshall Space Flight Center where the DART project office was located we definitely used a mantra of "test like you fly, fly like you test," and especially being a manned space flight center we have a high emphasis on reliability, on safety, on system redundancy and an important aspect of that is to verify that you've met system requirements. On DART, however, there were some initial differences in terms of the project expectations for how this would be done, among the things that would make it a high risk project, were the fact that it was to be largely single string, it was to be low cost. So these challenged some of our initial cultural stances at Marshall in the first place, we were going to do less, we were going to have a single string system, we were going to do maybe a less evasive form of insight with our prime contractor and certainly with all of their sub-tier vendors and subcontractors.

Jim Snoddy

What you buy up front determines what you're going to get on the end. DART was originally sold as a faster better cheaper and if you read the NASA payload classifications it was probably a class D or F when it was originally awarded. Through the maturation process and the down select of various contracts going away, DART eventually rose to want to be a class A payload, but as most people know, once you buy a you-go up front you cannot convert it into a Mercedes later on, you're kind of stuck with what you bought. The way our thing works what you pay for up front is what you usually end up getting in the ending and 90 percent of your success is determined by what you buy at ATP or before SRR because once you've established your

requirements, bought the hardware and procured the specifications you've imposed, the manifestation of that is what you get on the end, you don't halfway through the process try to start reconvert into something better.